Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

find complete sterility between relations in those species only which like Abutilon are infertile with pollen of the same stock. . . . .

Darwin, with his accustomed keenness of vision, has expressed* the conjecture that this diminution of fertility, observed so many times, is not a consequence of their hybrid nature, but of too close breeding in-and-in, and I am glad to be able to offer, in the examples of diminished fertility and complete sterility as a consequence of too close breeding in-and-in, in Abutilon-hybrids, herewith communicated, a new proof of the accuracy of Darwin's hypothesis. —*From the German of Fitz Müller*, *Itajhy*, *Oct.*, 1872. G. L. G.

THE FERTILIZATION OF GENTIANS BY HUMBLE BEES.† —The fringed gentian (*Gentiana crinita*) resembles the above in having erect flowers and the stamens below the stigmas. The fringed lobes of the corolla spread at right angles. Humble bees work upon this very much as they do upon Andrews' gentian.

There seems to be almost no end to the various contrivances by which flowers are fertilized by insects. Flowers closely allied, of the same genus, are fertilized in different ways, so it is not safe to make general rules. We may think that insects will act in a certain way, according to our notion, but after carefully watching them, we shall often see that they are not doing as we supposed they would. We need many patient observers for many years yet, to repeat observations made on this subject and to make new ones; we want to know how our insects behave upon every species of flower from the time they first visit it, to the time it affords no nectar to attract them.—W. G. BEAL, *State Agricultural College*, *Lansing*, *Michigan*, *Nov.* 8, 1873.

ZOOLOGY.

GIGANTIC CUTTLE-FISHES OF NEWFOUNDLAND.—It seems, as will be seen by the following correspondence, that we were incorrect in saying that the first letter of Mr. Murray on this subject was addressed to the late Prof. Agassiz (p. 120). It was in fact written to Prof. Marcou. We make reparation for the inadvertency by publishing the following letters from Prof. Agassiz, of which copies have been furnished us by Prof. Marcou. They are interesting as being the last scientific letters written by their lamented author: —

---

* Orig. Sp., 4th ed., 295.

† By an oversight omitted from the note on p. 180.

MUSEUM OF COMPARATIVE ZOOLOGY,
Cambridge, Mass., Nov. 25, 1873.

My Dear Sir:—My friend Marcou has communicated to me your most interesting letter; and I am delighted at last to have so direct information concerning the gigantic cephalopods of the Atlantic, of which so much has been said since the days of Pontoppidan. I will now hunt up everything that is worth noticing upon the subject, and if you will allow me an examination of your specimen, the zoological characters of the creature might be made out from the parts preserved, as we do of imperfect fossil remains. I would also ask leave to publish the substance of your letter to Mr. Marcou, in connection with this. With great regard, yours very truly, (Signed) L. AGASSIZ.

ALEX. MURRAY, Esq., St. John, Newfoundland.

MUSEUM OF COMPARATIVE ZOOLOGY,
Cambridge, Mass., Nov. 26, 1873.

My Dear Marcou:—Thanks for the letter and the photograph that Mr. Murray has sent you. It is very curious, and with your permission, I shall publish the contents accompanied with remarks if Mr. Murray should send me one of the large suckers in order to compare it with those of the species of cephalopods known on our coast. I have written him to this end. I have made a copy of Mr. Murray's letter, and return you the original. The more I consider this discovery, the more does it interest me. It is truly important for the history of cephalopods. Ever yours,

(Signed) L. AGASSIZ.

Prof. JULES MARCOU.

LAWS OF GEOGRAPHICAL VARIATION IN NORTH AMERICAN MAMMALS AND BIRDS.—My attention of late having been again especially directed to this subject, I wish to say a word respecting a discussion that occurred concerning it in the NATURALIST some months since, during my somewhat protracted absence in the west; particularly in respect to Mr. Ridgway's article in the September number (vol. vii, pp. 548–555). With all due deference to the important contributions Professor Baird has made towards our present knowledge of this subject, I think Mr. Ridgway has hardly fairly represented the case. After stating what he claims as Professor Baird's generalizations, four in number (see Mr. Ridgway's article), he says: "Here then are three laws of climatic or regional variation in size and proportions, and two of color, in which Mr. Allen is anticipated by Professor Baird."

Generalization "1" of Mr. Ridgway's enumeration refers to variation in size with locality, and is a law which was most unequivocably established by Professor Baird. Generalization "2" refers to the enlargement of the bill in Florida and cape St. Lucas birds, while generalization "3" refers to the "longer tails of western birds than of eastern examples of the same species." Generalization "4" refers to color, and will be presently noticed more in detail. In respect to generalizations "2" and "3," Professor Baird only refers to the disproportionate enlargement of the bill and tail at certain localities, as noteworthy facts, and, so far from explicitly stating them as general laws, he says in a foot-note, referring to the increased size of the bill, "This disproportionate difference of size at cape St. Lucas and south Florida is probably connected with the limited range of the species in those regions, which have thus an insular rather than continental relationship;"* thus apparently looking upon these variations as local phenomena. Neither in the case of the enlarged bills, nor the lengthened tail, does he hint at any general geographical law of variation of which these are simply the expressions, whereas my announcement of the *law of the enlargement of peripheral parts to the southward* included not only those instances noticed by Professor Baird, but a multitude of others I had myself observed, both among mammals and birds, and at numerous localities in addition to Florida and lower California. In respect to the tail it was increased in length at the *southward*—not at the *westward*—in accordance with the above law to which I called attention.

As regards laws of color variation, Professor Baird merely makes the general statement that "specimens from the Pacific coast are apt to be darker in color than those from the interior, the latter frequently exhibiting a bleached or weatherbeaten appearance, possibly the result of greater exposure to the elements and less protection by dense forests,"† whilst I announced a region of more rufous tints in the middle portions of the continent, darker tints on the Pacific coast north of latitude 40°, and light colors from the arid plains and deserts, as well as the law of increased intensity of color to the southward; at the same time correlating these general facts with the relative amount of aqueous precipitation and the hygrometric conditions of the atmosphere over these different areas of the continent.

---

* Amer. Jour. Sci. and Arts, 2d series, vol. xli, p. 191.

† Amer. Jour. Sci. and Arts, 2d series, Vol. xli, p. 192.

The statement Mr. Ridgway makes, notwithstanding the generally complimentary tone of the article as regards the present writer, that all the laws I announced (with one exception) "are substantially the same as the generalizations made by Professor Baird in 1866," seems to me to be by no means wholly warranted. Being forced to refer to the matter, I may as well state here that I claim the three following general laws as original: viz: 1, increase of intensity of color southward; 2, greater depth of color with increased atmospheric humidity; 3, enlargement of peripheral parts to the southward. These, with the fourth law relating to size, cover, in a general way, geographical variation in proportion, size and color. Baird's law of size and his facts of variation in respect to the proportional development of parts, taken with similar ones I had myself observed, were of course incentives to further research, and suggestive of the probable existence of some general laws of geographical variation of which these facts were the expressions.—J. A. ALLEN.

THE HABITS OF POLISTES AND PELOPÆUS.—My friend, Mr. Uhler, will pardon my incredulity; but the conviction forced itself on my mind, in reading the interesting paper on pp. 678–9, vol. vii, that some one had sadly confounded the two genera above mentioned. *First*, the description of the mud cells exactly applies to those of our common *Pelopœus lunatus* Fabr., as do, also, the descriptions of the method of building, and of storing them with young spiders. The actual cells, which I saw at Portland, would be at once recognized as belonging to this species by those familiar with its habits—the unusual length of some of them resulting from the nature of the beetle burrow or cavity in which they were built. *Secondly*, the habit which Mr. Uhler deems exceptional, or not belonging to Pelopæus, viz., that of not nursing its young and of sealing up the cell when once stored is precisely the habit which *does* belong to Pelopæus and which *does not* belong to Polistes. Mr. F. Smith has recorded facts which would indicate that some of the digger wasps, such as Mellinus, may open their burrows from time to time to supply fresh food to their young;* but we have yet no positive proof of the fact, and I know of nothing on record to indicate that any other digger wasp does so. The fact that old mud dabs are often found, in which the wasp egg had failed to hatch, and in which the spider food, in consequence, had not been appropriated, is sufficient proof, if proof were wanting, that Pelopæus never does so.

---

* Ann. and Mag. Nat. Hist., May, 1869.

The habits of Polistes, as I think every one who has observed them must admit, are absolutely incompatible with Mr. Uhler's conclusions. They have recently been most admirably set forth by Siebold in his last work on Parthenogenesis.*

A large weather-worn impregnated female or queen founds the colony in spring, by the construction of a peduncled, gray, paper-like cell, at the bottom of which an egg is deposited. The cell is enlarged as fast as the larva increases in size, and other cells are, meanwhile, built adjoining the central one. The young are always fed with the masticated flesh of other insects, such as small caterpillars, small moths, etc., and the mother always rejects the food found in the stomachs of these herbivorous species. The cells are never closed until the full grown larva closes them. The first generation consists of females only; or, more properly, female workers differing from the workers of Apis in being always fertile, but, from necessity, parthenogetically so. They have precisely the same structure as the queen, but are distinguished by their smaller size and brighter color, especially of the wings. By their aid the nests increase in size, or new nests are built, and in the fall of the year the larger females and the males appear. Occasionally honey is found in the cells, but its use is not fully understood.

Now have we a species so divergent from this habit as to borrow the very different habit of Pelopæus? For my own part I have too much faith in the unity of habit in the same genus to believe it without better evidence. Larrada and Sphex, which generally burrow in the ground, present exceptional species which build nests above ground in the curl of a leaf,† but the species which thus diverge in habit also diverge in structure from the typical genus. Again in Agenia which generally builds mud cells above ground, Mr. Smith has shown that one species (*A. variegata*) burrows in the ground. Yet these exceptional differences in the habit of the same genus do not begin to compare with those between the habit of Pelopæus and Polistes; and if Mr. Uhler's observation is a correct one, it is a most remarkable entomological discovery.

---

* Beiträge zur Parthenogenesis der Arthropoden, 1871.

† Packard's "Guide," pp. 165 and 169.

The Polistes which Mr. Uhler exhibited at Portland is a quite common species (or perhaps, more correctly speaking, variety), marked in my cabinet *P. fuscatus* Fabr., and which *I know to build paper-like nests*, according to the habit of the genus. In winter collecting I constantly meet with it and other species hibernating in old hollow logs and stumps, and I cannot help thinking that Mr. Bryan, finding it in the same log with his mud cells, jumped to the conclusion that it was the architect of those cells; and that its yellow marked body and legs prevented his distinguishing it from *Pelopœus lunatus* which he afterwards observed building mud cells. At all events, I hope Mr. Uhler will tell us whether or not he himself observed any of the habits described, and will give us that confirmation, of so anomalous a fact, which will prevent all incredulity about it in the future, and which the article in question fails to give.—C. V. RILEY, *Dec.* 3, 1873.

NOTES ON THE PLANT LICE.—That aphides, in the spring of the year, are developed into wingless forms from ova which were deposited at the close of the preceding autumn, and which have remained dormant during the famine winter months, I believe was the theory of naturalists till the year 1852. At this time Prof. Owen, in his famous Hunterian lecture on the generation of insects, claimed the reproduction of winged individuals to be an occasional occurrence, and also the exceptional mode.

My observations during the past season have been of such a character as to indicate that the professor is not wholly correct. From the first appearance of plant lice down to within a comparatively recent date, numberless winged individuals of *Aphis rosæ*, *mali*, etc., have been noticed, associated with clusters of the apterous form, but more usually single or in pairs, upon their favorite plants, at such distances from well-established colonies as to give warrant to the belief that wings were solely acquired for the purpose of diffusing the species.

In some carefully conducted experiments which I have made, some of these winged forms proved quite as prolific as the wingless; while others, apparently of the same age, manifested indications of sterility, from which latter fact it seems just to conclude that these were sterile females.

Further, it has been strongly affirmed by those who have made this peculiar group their study down to the aforementioned date, that procreation from a virgin mother continues until the eleventh generation is exhausted; and that when this period has been reached, winged individuals of both species make their appearance, which, after having celebrated their nuptials in mid-air, repair to some suitable plant where the females deposit their ova for the continuation of the species, after which they both die. Prof. Owen, in his writings, says "When this exhaustion occurs, some members of the last larval brood are metamorphosed into winged males, others into oviparous females," the latter being apterous. That such is only partially true I am satisfied from observations made during the latter part of October upon the *A. mali* of Harris.

This species, from its convenience, has received very careful attention. On the 26th of October last, while engaged in an examination of some of the principal shoots of a *Spirœa corymbosa*, which seem to be particularly adapted to the growth and well being of the above species, I observed hundreds of wingless females engaged in oviposition. Directing my glass to the leaves, where scores were still deriving a scanty and precarious subsistence, I noticed many smaller specimens which presented quite a contrast as regards size when placed by the side of their plump associates. The former, from the endearment which they lavished upon the latter, I soon satisfied myself were males. Upon other portions of the same field of view were many in the act of copulating. One particular phase of animal life very forcibly impressed my mind on this occasion; to wit, the ardent temperament of the males, and the comparative unconcern of the females previous to coition.

Long and anxious watching has convinced me that in the fall of the year not a single winged individual of either sex is to be found in this species, and further that the essential duties of reproduction and of oviposition are performed without the necessity of wings, and generally upon the very stalks where the insects were born and lived.

In size, the males of *A. mali* are vastly inferior to the females, being less than one-half the latter. Externally they appear like undeveloped females. Upon any other occasion than the present, I should assuredly have characterized them as females which a healthy, vigorous nutrition would have pushed unto perfection.

That they are males has been conclusively shown. But what has wrought the change? I think it can be shown that lack of nutrition, in consequence of a diminished supply of sap to the leaves, has been the instrument at work. If continuance of warmth and consequent plant-vitality are conditions favorable to an almost endless succession of the female type, a reverse order of things, by acting in a sudden manner, and at a certain stage of female life, producing a check to further development, must assuredly generate the opposite sex.—T. G. GENTRY.

A STRAGGLER IN THE OHIO.—On a recent visit to the Museum of Comparative Zoology my attention was called by Mr Bliss to a small fish labelled in my own handwriting several years since as follows: *A singular fish of a rare genus*, *Louisville*, *Ky.*, 1837. Nothing further is known as to the history of the specimen, but as 1837 was some ten years before Professor Agassiz began to form the unrivalled collection of fishes to which this specimen belongs, it is very probable that the label was a copy of some older one on the bottle in which the fish was received at the Museum, simply rewritten by myself sometime between 1856 and 1864. On making a careful examination of the fish it proved to be the *Gobiosoma molestum* of Girard, who described the species from a specimen obtained by Mr. J. H. Clark at Indianola, on the coast of Texas. Girard's description, with a figure, is in the Mexican Boundary Survey (Ichthyology, p. 27, pl. 12, fig. 14), 1859. Girard also describes the genus and species in the "Proceedings of the Philadelphia Academy," 1858, p. 169. The description by Girard applies perfectly to the Louisville fish and his figure is nearly correct. I note the following slight differences. Girard's specimen was two inches in total length, the Louisville specimen is two and one-half inches; Girard gives the fin rays as follows; dorsal VII + 12, anal 11, ventral 5, pectoral 16, caudal 20. My count of the Louisville specimen is, dorsal VII + 12, anal 12, ventral I + 5, pectoral 18 or 20, caudal 20; so that there is no important variation. Ventral 5, as given by Girard is probably a mistake due to his overlooking the small ventral spine which is common to nearly all members of the family. The proportions of the two fishes are the same. Girard's figure represents the rays of the first dorsal a little too far apart and the last rays are too short, as there is but little difference in the length of the rays of this fin. The rays of the dorsal are also slightly too long in proportion to the size of the fish figured, and the pectoral fin is also a little too long. The anal fin should be about one ray nearer the caudal. In the Louisville specimen the two dorsals are slightly connected at the base by a low membrane. This specimen has been so long in spirits that no markings of color can be traced, but the membrane of the fins shows dark shadings made up of small dark points.

Taking it for granted that the label is correct, this little fish must have made the perilous passage up the Mississippi river into the Ohio river, a journey north of about eight degrees of latitude and of many hundred miles distance. That it is not impossible for the fish to have made such a journey from salt to fresh water, we have the knowledge expressed by Dr. Günther as follows:—"This family [Gobiidæ] offers numerous instances of the fact, that a part of the individuals of one and the same species are entirely confined to fresh waters, whilst others live in the sea."

Independently of the interest given by the very probably correct label locating the place of capture as the Ohio river, the examination of the fish has proved that Girard's species is a valid one and distinct from the *Gobiosoma alepidotum* of our eastern Atlantic coast. This last is a more slender fish and differs in several other particulars. Should any of our readers have the opportunity of collecting the small fishes of the rivers flowing into the gulf of Mexico it would be well to be on the lookout for other specimens of the *Gobiosoma molestum*, which can be easily distinguished from other small fishes of our rivers by the following characters: head and body *without scales;* head about one-fourth the total length of the fish; eyes prominent and situated *very near together* on the anterior part of the head; two fins on the back, the anal fin under the second dorsal fin, pectoral fin rounded and well developed, tail fin rounded, ventral fins situated between the pectorals *and united together, forming a single pointed fin* lying close to the abdomen. —F. W. PUTNAM.

"ASSEMBLING" AMONG MOTHS.—I send you the following account of some of my observations, which you are at liberty to publish if you think it of any interest to your readers. Something like seven or eight years ago I was engaged in making a collection of insects and during the winter had collected quite a number of cocoons of the *Attacus Promethea* moth (Harris) which were placed for safe keeping in the furnace room of a small greenhouse, the doors and windows of which were kept closed to prevent the escape of the insects. One afternoon in the month of June, I observed a strange insect fluttering about the greenhouse, which it soon entered through a ventilator, where I captured it, and found it to be a male of the above mentioned species, an insect which, until then, I had never seen. During the afternoon, when upon another part of the farm, I saw another specimen, also a male, flying high and directing his course straight for the greenhouse. I was struck with the coincidence of seeing two of these insects in the same afternoon, but was fairly astonished upon entering the greenhouse in the evening to find some half a dozen of them, *all males*, sitting about upon various parts of the building, and apparently patiently waiting. They were all immediately killed and pinned. The next morning, when I entered the furnace room, I found that during the night one of my cocoons had produced a splendid *female* moth. Did those males come upon an errand of love? If so, by what sense were they guided to the right spot, a place entirely unlike the natural haunts of the insect?

During the past winter in riding about the country I collected several cocoons of this moth for the benefit of a young naturalist friend of mine, but retained one, which I hung upon the wall of my office.

On the morning of June 21st, a fine female moth came out and was the object of considerable interest to the occupants of the room. During the day I related the above incident to a gentleman and at the same time described the appearance of the male insect. I had occasion to be absent from the room a short time during the afternoon, and upon my return was told that a male moth had been there and fluttered in and out at the open window several times, but had finally disappeared. The next day was Sunday and the office was closed, but on Monday afternoon a male again made his appearance at the office window, came in, and after fluttering about the room for a space of ten or fifteen minutes, found the object of his search, and the connection was consummated before our very eyes. Let it be remembered that the office is situated upon the principal business street, in the centre of the city, and from half a mile to a mile from any place where such an insect would naturally be found. A friend who has a store some half a mile from my office upon the same street, has had an experience of the same kind. A cocoon which hung in her store produced a female moth, and within the next two days her store was visited by half a dozen of the male insects. Can any one tell me what fine sense this may be which guides this insect so far, and into such strange places in search of his waiting mate?—F. E. L. BEAL, *Fitchburg, Mass., July* 7, 1873.

[We print the above as fair examples of "assembling" among moths. Nearly every entomologist has had similar experiences. It is a common occurrence. We are disposed to think that the male is guided by the sense of smell, as the antennæ of the silk moths probably possess this as well as the sense of hearing.—EDITORS.]

ORGANS OF HEARING IN INSECTS.—At the last meeting of the National Academy of Sciences, Professor A. M. Mayer exhibited experimental confirmation of the theorem of Fourier as applied by him in his propositions relating to the nature of a simple sound, and to the analysis by the ear of a composite sound into its elementary pendulum-vibrations; and to show experiments elucidating the hypothesis of audition of Helmholtz. Placing a male mosquito under the microscope, and sounding various notes of tuning-forks in the range of a sound given by the female mosquito, the various fibres of the antennæ of the male mosquito, vibrated sympathetically to these sounds. The longest fibres vibrated sympathetically to the grave notes, and the short fibres vibrated sympathetically to the higher notes. The fact that the nocturnal insects have highly organized antennæ, while the diurnal ones have not; and also the fact that the anatomy of these parts of insects shows a highly developed nervous organization, lead to the highly probable inference that Prof. Mayer has here given facts which form the first sure basis of reasoning in reference to the nature of the auditory apparatus of insects.

These experiments were also extended in a direction which added new facts to the physiology of the senses. If a sonorous impulse strike a fibre so that the direction of the impulse is in the direction of the fibre, then the fibre remains stationary. But if the direction of the sound is at right angles to the fibre, the fibre vibrates with its maximum intensity. Thus, when a sound strikes the fibrils of an insect, those on one antenna are vibrated more powerfully than the fibrils on the other, and the insect naturally turns in the direction of that antenna which is most strongly shaken. The fibrils on the other antenna are now shaken with more and more intensity, until, having turned his body so that both antennæ vibrate with equal intensity, he has placed the axis of his body in the direction of the sound. Experiments under the microscope show that the mosquito can thus detect to within five degrees the position of the sonorous centre. To render assurance doubly sure, Prof. Mayer, having found two fibrils of the antennæ of a mosquito which vibrated powerfully to two different notes, measured these fibrils very accurately under the microscope. He then constructed some fibrils out of pine wood, which, though two or three feet long and of the thickness of small picture-cord, had exactly the same proportion of length to thickness as the fibrils of the antennæ of the mosquito. He found that these slender pine rods or fibrils had to each other the same ratio of vibration as the fibrils of the mosquito.

CHANGE OF HABIT.—All who have travelled of late years on the St. John's River, in East Florida, must have noticed the cows standing for hours at considerable distances from the shore, thrusting their heads from time to time into the water. This is explained by a change of habit to which they have been driven, during the winter months, by a scarcity of suitable grazing on land. Grazing is never very good there at any time and compels them to feed on moss, young palmetto leaves, shoots of shrubs, etc., which under ordinary circumstances they would reject. The "river grass," which appears to be a species of Valisneria, has become a new and very considerable resource for food. It is said that this plant has established itself, within a few years, in the shoal waters of the lower part of the St. John's where it now covers large submerged tracts, and it is to obtain this that the cows have taken to their semi-aquatic habits. We have frequently watched them and have found that while gathering food, the head was kept beneath the surface for a period varying from fifteen to thirty-five seconds, during which time respiration was of course averted. We have recently seen a colt feeding in a similar manner. The hogs have also taken up this habit, but hold their heads under the water for a shorter time than the cows. The young calves, though they do not eat the "grass," follow the cows and may sometimes be seen with their heads only out of water.—I. J. WYMAN.

SPONTANEOUS GENERATION.—Mr. E. Ray Lankester, after reviewing in "Nature" the results of recent work done in developing Bacteria, etc. in infusions, concludes that "archebiosis" of "abiogenesis" is "not in any way rendered more probable than it was before by Dr. Bastian's experiments with organic infusions. Prof. Smith and Mr. Archer, of Dublin, eminent authorities in the study of the lower algæ, have criticised in detail and suggested explanations of some of the statements in the third part of 'The Beginnings of Life,' viz., statements relating to the transformation of various species of organisms into each other. They show (the reader may consult Prof. Smith's paper in the October number of the 'Quarterly Journal of Microscopical Science,' 1873), that the asserted 'facts' of transmutation are not facts. It is abundantly demonstrated that the fundamental observations recorded by Dr. Bastian are erroneous, and that he has been mistaken."

DISCOVERY OF THE WATER THRUSH'S NEST IN NEW ENGLAND.—Among the trophies taken during a late collecting excursion in the western part of the state of Connecticut are the nest and four eggs of the long-billed water thrush (*Seiurus Ludovicianus*), discovered in June, 1873, at Franklin Station, New London county.

The nest was sunk behind a cushion of moss, and into the rotten wood among the roots of a great tree growing out of the bank (of the Yantic river) in such a manner that it was completely covered over, except just in front, by the roots of the tree. The nest itself was two and one-half inches in internal diameter, and rather shallow. It was rather loosely and carelessly constructed of fine grass and some little dead, fibrous moss: but beneath, a few, and about the outside, particularly in front, many dead leaves were put, as a sort of breastwork to decrease the size of the entrance and more thoroughly conceal the sitting bird. It was underneath the edge of a perpendicular bank eight or ten feet from the water.

The eggs were four in number, and fresh, though the bird was sitting upon them at 2 P. M. Before being blown they were of a beautiful rosy tint: but the ground color is lustrous white, giving the egg a polished look. They are more or less profusely spotted all over with dots and specks, and some obscure zigzagings, of two tints of reddish brown, with numerous faint points and touches of lilac and very pale underlying red. These marks are much more thickly disposed at the greater end where they form quite large blotches, but there is little indication of a ring. The eggs differ from those of *S. aurocapillus* in being more round and polished, and the spots generally larger and more distinct. One, however, is much paler than the other three. They measure ·80×·60; ·80×·60; ·79×·61, and ·75×·62 of an inch.

The female was shot after giving me a good opportunity to observe her behavior, when she thought herself entirely alone. She kept close to the water, but occasionally flew upon low twigs, alighting in a careful balancing attitude as though it were a great effort to hold on, and keeping up a coquettish flirting of her tail and queer, comical movements of her head. When frightened from the nest she uttered a few distinct chirrups but afterwards kept silent.—ERNEST INGERSOLL, *Cambridge*, *Mass.*

TWO RARE OWLS FROM ARIZONA.—Charles Bendire, U. S. A., well known as an enthusiastic and energetic ornithologist through his various communications to the NATURALIST, has lately sent me a specimen each of two rare species of owls, from the vicinity of Tucson, Arizona. Of *Syrnium occidentale*, Captain Bendire's specimen is the second ever obtained, the first having been procured by Mr. Xantus at Ft. Tejon, southern California, in 1859. The specimen collected by Captain Bendire is an adult female, collected Nov. 7, 1872. The manuscript notes on the label are as follows:—"Length, 17·25; extent, 42·25; bill, pale yellow; eyes, blue-black."

The specimen of *Micrathene Whitneyi* is the fourth ever obtained, the type being from Ft. Mojave, California, and the other two from Socorro Island, off the western coast of Mexico, in latitude 18° 35′. The latter were collected by the late Col. A. J. Grayson, and the former by Dr. Cooper. Captain Bendire's specimen, which is an adult in fine plumage, was shot April 20, 1872, on the Rillito creek. There are no measurements or other notes accompanying it. Accompanying these specimens is an adult male of *Asturina nitida*, var. *plagiata*, shot on the Rillito creek, May 30, 1872. This specimen possesses peculiar interest from the fact of being the first specimen received at the National Museum from any portion of the United States, though its occurrence within our limits was previously noted, upon the strength of a specimen observed by me in August, 1871, in Richland Co., Illinois (see AMERICAN NATURALIST, vii, April, 1873).—ROBERT RIDGWAY.

AVIFAUNA OF COLORADO AND WYOMING.—Our genial critic (AMER. NAT., vii, 631) unintentionally misconstrues the sentence of ours which he selects as a point of attack. We said, in illustration of a stricture we passed upon the paper he edited, that "such birds as *Geococcyx Californianus* and *Pipilo mesoleucus* find themselves in ornithological company they never saw outside of a book." Dr. Brewer makes us out to mean by this, that *these two* birds are not found together except on his list, and then proceeds to rebuke our supposed ignorance in a kindly and cogent way. But we lived a long while where these two species occur together, and were perfectly aware of such occurrences ; what we meant was, that these were two birds which were placed on the list among *certain other* species with which they were not elsewhere found associated ; thereby demonstrating the point of our objection, namely, the incongruity of the Holden-Aiken list as edited by Dr. Brewer. Thus our criticism remains in force, while the point of Dr. Brewer's reply disappears.—ELLIOTT COUES.

THE OLIVE-SIDED FLYCATCHER.—Mr. Merriam (in your Dec. No.) forgets that this bird was first noticed by Mr. John Bethune, at Mt. Auburn, near Cambridge, Mass. The first specimen that Audubon ever saw was shot by him in company with Nuttall, in this town (Brookline) about 1835. A year or two later I found here the nest, with eggs, and have since seen the species from time to time, generally in secluded woods abounding in pitch-pine, like the once lovely but now desolate spot where it was first discovered.—J. E. CABOT.

A REMARKABLE PECULIARITY OF CENTROCERCUS UROPHASIANUS.—A peculiarity of this species, which I have not seen noticed, is that its stomach, instead of being hard and very muscular as in other Gallinacea, is soft and membraneous, like that of the birds of prey. This was first told me by hunters in Nevada, and I afterwards satisfied myself of the truth of their statement that the sage hen "has no gizzard," by dissecting a sufficient number of individuals. This bird is never known to eat grain, but it subsists almost entirely upon green leaves of Artemisia and on grasshoppers.—ROBERT RIDGWAY.

On a Hummingbird new to our Fauna, with certain other facts ornithological. — The following notes were collected during the past season (1873), in connection with the explorations in charge of Lieut. G. M. Wheeler, and under the auspices of the Engineer Department. They are selected as of especial interest, from a large amount of material to be embodied in a future report.

Eugenes fulgens (Sw). Sp. Char.—Male:—Tail rather deeply emarginated. Head above violet purple. Rest of upper parts bronzed green, becoming pure bronze on the tail. Gorget brilliant emerald green, with strong purple reflections. Lower portion of breast and abdomen opaque black, more velvety towards the green of the throat. Sides of body dull green. Wing above and below dull purple. Upper and lower wing coverts green. Crissum pale brownish gray. Bill and feet black.

Female: Tail double-rounded. Above dark metallic green, each feather edged with ash. Below dull white; feathers of throat and fore part of breast with dull grayish green centres. Sides green edged with ash. Wing dull purple. Each feather of the tail except the two central, which are green throughout, with broad purple bands. Three outer tail feathers broadly tipped with dull white which, on the outer, extends slightly further up on the outer web. Length 4·61; wing 2·43; tail 1·75; bill 1·09.

This fine species has, for the first time, been ascertained to inhabit the United States, it never having been observed before farther north than the table-lands of central Mexico. While at Camp Grant, Arizona, Sept. 24th, I procured a fine female, on a small stream issuing from a mountain cañon. When first seen it was being pursued by another hummer, of which I obtained scarcely a glimpse, as they darted past through the trees, but I have little doubt that it was a second of the same species. I think it not unlikely that this species will be found to be not uncommon in summer, in the mountainous districts in southern Arizona and New Mexico. Here along the streams, where the flora is abundant, the multitude and variety of the hummingbirds, resplendent as they are with the most gorgeous colors, cannot fail to strike the most unobservant eye. In the mountains near Apache, Arizona, two of our species (*Selasphorus rufus* and *S. platycerus*) are found in almost incredible numbers, bringing forcibly to mind the accounts of the abundance of the birds of this family, amidst the tropical vegetation of South America; and it will be strange indeed if a careful search in midsummer, in these localities, does not reveal still other species, which must find, in this semi-tropical climate and flora, a congenial home.

Baird's Bunting (*Centronyx Bairdii* Bd.). The interesting fact of the discovery of Baird's bunting, in large numbers in northern Dakota, by Dr. Coues, was announced in the November Naturalist. Additional light is thrown upon the range of this hitherto almost unknown species, by its discovery in southeastern Arizona and southwestern New Mexico. I found it in immense numbers, from Sept. 20th till late in October, throughout the rolling plains along the bases of the mountains, and even quite high up among the foot-hills. It was usually associated with the savanna and yellow-winged sparrows, and seems to embrace in its habits certain characteristics of either species. Its flight is particularly like that of the former bird, but even more wild and irregular. It pursues its zigzag course for a couple of hundred yards, and then, suddenly turning sharply to one side, alights behind some friendly bush, or tuft of grass. Like the yellow-winged sparrow, it is difficult to flush, but seeks rather to evade search by running nimbly through the grass, changing its course frequently, and hiding wherever possible, flying only when hard pressed. A large number of specimens were secured, all moulting, and many in extremely ragged plumage; from their condition it is presumed that they were not migrants, but breed in the immediate locality.

BLACK-BREASTED WOODPECKER (*Sphyrapicus thyroideus* Bd.). This species was first made known to science through a description by Cassin, published in Dec., 1851, in Pr. A. N. Sc. In 1857, Dr. Newberry published a description of Williamson's woodpecker (*S. Williamsoni*) from specimens obtained by Lieut. Williamson's Expedition: since which time the two species have been accepted by ornithologists as perfectly valid, the true relationship of the two being wholly unsuspected. While in southern Colorado during the past season, I obtained abundant proof of the specific identity of the two birds in question, *Williamsonii* being the male of *thyroideus*. Though led to suspect this, from finding the two birds in suspicious proximity, it was some time before I could procure a pair actually mated. After careful search I discovered a nest excavated in the trunk of a live aspen (*Populus tremuloides*), and both the parent birds were secured as they flew from the hole, having just entered with food for the newly hatched young. As regards the sexual differences of coloration, the case of *thyroideus* is wholly unique. In this species, the colors of the female are radically different from those of the male. With this single exception as far as known, the differences of color between the sexes, in the family of woodpeckers, are confined mainly to the absence, or less amount, of the bright crimson or red patches about the head.

Eared Grebe (*Podiceps auritus* var. *Californicus* Coues). In a series of alkali lakes about thirty miles northwest of Ft. Garland, southern Colorado, I found this species common and breeding. A colony of perhaps a dozen pairs had established themselves in a small pond of about four or five acres in extent. In the middle of this, in a bed of reeds, were found upward of a dozen nests. These, in each case, merely consisted of a slightly hollowed pile of decaying weeds and rushes, four or five inches in diameter, and scarcely raised above the surface of the water, upon which they floated. In a number of instances they were but a few feet distant from the nests of the coot (*Fulica Americana*) which abounded. Every grebe's nest discovered contained three eggs, which in most instances were fresh; but in some nests were considerably advanced. These vary but little in shape, are considerably elongated, one end being slightly more pointed than the other. They vary in length from 1·70 to 1·80 and in breadth from 1·18 to 1·33. The color is a faint yellowish white, usually much stained from contact with the nest. The texture is generally quite smooth, in some roughened by a chalky deposit. The eggs were wholly concealed from view by a pile of weeds and other vegetable material laid across. That they were thus carefully covered, merely for concealment, I cannot think, since in the isolated position in which these nests are usually found, the bird has no enemy against which such precaution would avail. On first approaching the locality the grebes were all congregated at the further end of the pond, and shortly betook themselves through an opening to the neighbouring slough; nor so far as I could ascertain did they again approach the nests during my stay of three days. Is it not then possible that they are more or less dependent for the hatching of their eggs, upon the artificial heat induced by the decaying vegetable substances of which the nests are wholly composed?—H. W. Henshaw.

Occurrence of Telea polyphemus in California.—A correction.—On p. 454, vol. vii, of this journal, and on p. 15 of the "Proceedings of the Boston Society of Natural History," xvi, I state that *Telea polyphemus*, the American silk worm, does not occur in the Pacific states. It seems that Mr. Henry Edwards, in an interesting paper published in the "Proceedings of the California Academy of Sciences" (received Dec. 11, after my second paper went to press) records this moth as "apparently not rare in Vancouver island. . . . . . This insect, though one of our Pacific coast varieties, has nevertheless a wide range. I have seen specimens from Victoria, northern and middle California, San Diego, cape St. Lucas, and San Blas, Mexico."

On pp. 24 and 40, Bost. Proc., xvi, *Gorytodes uncanaria* Guen. should read *Platœa Californiaria H.-Sch.* and *Gorytodes trilinearia* should read *Platœa trilinearia.* — A. S. PACKARD, Jr.

IDENTITY OF OUR HYDRA WITH EUROPEAN SPECIES.—At a late meeting of the Academy of Natural Sciences of Philadelphia, Prof. Leidy made some remarks on our native *Hydra*, and described the common green and brown species. He stated that they had been regarded as distinct species from the green and brown ones of Europe, but he could perceive no difference. He described the habits of some of our *Rhizopoda* in eating *Diatomaceæ;* they absorb the chlorophyl and reject the silicious shell. *Amœba* devours *Arcella.*

GEOLOGY.

THE GREAT LAVA-FLOOD OF THE WEST. — Prof. J. LeConte describes in the March number of the "American Journal of Science," what he regards as the most extraordinary lava-flood in the world. "Commencing in middle California as separate streams, in northern California it becomes a flood flowing over and completely mantling the smaller inequalities, and flowing around the greater inequalities of surface, while in northern Oregon and Washington it becomes an absolutely universal flood, beneath which the whole original face of the country, with its hills and dales, mountains and valleys, lies buried several thousand feet. It covers the greater portion of northern California and northwestern Nevada, nearly the whole of Oregon, Washington and Idaho, and runs far into Montana on the east and British Columbia on the north." Its extent "cannot be less than two hundred thousand to three hundred thousand square miles, *i. e.*, greater than the whole area of France, or nearly double the area of California." He believes the mass of lava to have issued from fissures, some in the Coast Ranges, but mostly in the Cascade and Blue Mountain Ranges. This flood began, probably after the miocene tertiary period and continued